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First Named Inventor	Tadayoshi Iijima
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Examiner Name	K. M. Bernatz
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ENCLOSURES (*Check all that apply*)

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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	RADER, FISHMAN & GRAUER PLLC		
Signature			
Printed name	Lee Cheng		
Date	September 12, 2007	Reg. No.	40,949

Docket No.: OKA-0019
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Tadayoshi Iijima

Application No.: 09/748,188 | Confirmation No.: 2973

Filed: December 27, 2000 | Art Unit: 1773

For: TRANSPARENT CONDUCTIVE FILM AND METHOD FOR PRODUCING THE SAME | Examiner: Kevin M. Bernatz

REPLY BRIEF UNDER 37 C.F.R. §41.41

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This is a Reply Brief under 37 C.F.R. §41.41 in response to the Examiner's Answer mailed on July 13, 2007.

All arguments presented within the Appeal Brief of September 27, 2006 are incorporated herein by reference. Additional arguments are provided herein below.

The Examiner's answer supports the rejection of claims 2, 3 and 8 under 35 U.S.C. §103(a) as allegedly being obvious over Yukinobu et al. (U.S. Patent No. 5,411,792) in view of Sumitomo Cement KK (JP 06-087631-A). At pages 4 and 5 of the Examiner's Answer, the Examiner argues that the limitation "*said compressed layer formed by compressing the conductive particles and the resin on the support with a compression force of at least 44N/mm*^{2}" is a process limitation and therefore, is not further limiting in terms of the structure resulting from the claimed process. In other words, it appears that the Examiner is not giving any patentable weight to this limitation since such limitation is not deemed by the Examiner to produce an unobvious difference

in the structure of "compressed" film disclosed in Yukinobu et al. However, Applicant disagrees with the Examiner's arguments in this regard.

It is well known under U.S. practice that the structure (and/or composition) implied by the method of productions should be considered when assessing the patentability of product claims over the prior art, especially where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product (see MPEP §2113 and *In re Garnero*, 412 F.2d 276, 279, 162 USPQ 221, 223 (CCPA 1979)). In other words, a process limitation in a product claim is given patentable weight if it imparts distinctive structural characteristics to the final product.

It is clear that the limitation "*said compressed layer formed by compressing the conductive particles and the resin on the support with a compression force of at least 44N/mm^2*" does impart distinctive structural characteristic to the claimed transparent conductive film. By compressing the conductive particles and the resin on the support with a compression force of at least 44N/mm^2, the contact between the conductive particles in the conductive film is increased, thereby increasing conductivity, strength and adhesion of the film and decreasing resistivity without the use of a large amount of binder resin and without calcining at a high temperature. As support, Applicant wishes to direct the board's attention to page 23 of the specification which discloses that if the layer containing the conductive fine particles is compressed at a pressure of less than 44 N/mm^2, it is difficult to obtain a conductive film excellent in conductivity.

Thus, Applicant believes that the Examiner erred in not giving any patentable weight to the limitation "*said compressed layer formed by compressing the conductive particles and the resin on the support with a compression force of at least 44N/mm^2*" even though such limitation imparts distinctive structural characteristics to the claimed transparent conductive film.

Also, on pages 8 and 9 of the Examiner's Answer, the Examiner argues that the unexpected superior properties (low electric resistance) of the claimed transparent conductive film obtained by maintaining the amount of resin at approximately 0.03-9.3 parts by volume (with respect to 100 parts by volume of said conductive particles) is expected based on the cited references since both Yukinobu et al. (citing column 1, lines 39-59, of Yukinobu et al.) and Sumitomo Cement KK (citing paragraph 0012 of Sumitomo Cement KK) allegedly teach lower

amounts of resin leads to lower electric resistance. However, Applicant strongly disagrees with the Examiner's interpretation of Yukinobu et al. and Sumitomo Cement KK, since the Examiner only cites teachings from these references which support his arguments while conveniently disregarding other teachings in Yukinobu et al. and Sumitomo Cement KK which contradicts the Examiner's conclusions.

Both Yukinobu et al. and Sumitomo Cement KK, in the passages cited by the Examiner (column 1, lines 39-59, of Yukinobu et al. and paragraph 0012 of Sumitomo Cement KK), teach that if the amount of resin used is too small, gaps remain among the filler particles which increases light scattering and haze value while lowering transparency, film strength and adhesive force ("*If the resin is used in too small an amount, . . . gaps remain among the filler particles and constitute a cause for light scattering, thereby lowering transmittance or degrading optical performance of the coating, enhancing a haze value and lowering strength of the film as well as adhesive force of the film to a substrate*" and "*if the filler content increases, the transparency of the resulting film (layer) is reduced*"). Thus, contrary to the Examiner's arguments, it can be asserted that both Yukinobu et al. and Sumitomo Cement KK teach against using too small of an amount of resin in achieving a transparent conductive film having a low electric resistance value since such amount will also result in higher light scattering and lower transparency which is a problem already discussed in the "Disclosure of the Related Art" section of the present specification (see pages 2-4 of the specification).

As disclosed in the specification and shown in the Examples, the present invention is directed to a transparent conductive film having a low electric resistance value, low light scattering **and** high transparency (as well as a high mechanical strength) without the use of a large amount of resin serving as a binder and without calcining at a high temperature. The present invention overcome the problems discussed in Yukinobu et al., Sumitomo Cement KK and the prior art by maintaining the resin at approximately 0.03-9.3 parts by volume with respect to 100 parts by volume of said conductive particles, forming the compressed layer by compressing the conductive particles and the resin on the support with a compression force of at least $44N/mm^2$, and combining an impregnated transparent substance with the compressed layer.

In other words, by combining the use of a low amount of resin with high compression, a transparent conductive film having a low electric resistance value, low light scattering **and** high transparency can be obtained. As discussed on page 22, line 23, to page 23, line 6,

> *"[T]he compression reduces the electric resistance and improves the strength of the film. Namely, the compression increases the number of contact points among the conductive fine particles to increase the contact area. For this reason,* ***the electric resistance is reduced and the coating film strength is increased****. Since the fine particles are originally liable to be agglomerated, the compression makes a firm film. Also,* ***the compression improves the haze****." (Emphasis Added)*

Such a combination and result is not at all disclosed or expected from the teachings of Yukinobu et al. and Sumitomo Cement KK.

Under U.S. practice, the Examiner is not permitted to pick and choose which teachings of Yukinobu et al. and Sumitomo Cement KK are combined and modified to arrive at the present invention. Such a construction is improper since the Examiner is relying on Applicant's disclosure to establish his *prima facie* case of obviousness. In other words, the Examiner's conclusion of obviousness in this case is based on improper hindsight reasoning for ignoring other teachings in Yukinobu et al. and Sumitomo Cement KK which teach against the use of a low amount of resin.

For the same reasons, the Examiner cannot disregard other portions of the range taught by Sumitomo Cement KK (i.e. for example, 147 to 296 parts by volume) which Applicant has shown in Comparative Examples 9-12 to possess high electric resistance values.

Thus, despite Examiner's arguments in the Answer dated July 13, 2007, Applicant have clearly shown on the record from the experimental data in the Examples and Comparative Examples of the specification that the claimed range of "*0.03-9.3 parts by volume*" achieve superior results not expected based on the teachings of Yukinobu et al. and Sumitomo Cement KK..

Lastly, in the Examiner's Answer dated July 13, 2007, on page 6, lines 6-9, the Examiner notes that "37.5 wt% resin would be ~80 vol% based on a difference in densities of 7:1 (assuming a 100g basis)". However, Applicant disagrees with the Examiner's conclusion in this regard. As described on page 5, third paragraph, of the Appeal Brief dated August 30. 2006, the resin amount of 0 to 37.5 wt% in Sumitomo Cement KK corresponds, as represented by volume, to a much broader range of 0-296 parts by volume with respect to 100 parts by volume of the conductive particles, as shown below.

The specific gravity of tin-doped indium oxide (i.e. ITO) as conductive particles is in a range of 6.9-7.1, and the specific gravity of the resin is in a range of 1.2-1.4. Therefore, Applicant calculated using 6.9 as the specific gravity of ITO, and 1.4 as the specific gravity of the resin, to obtain the **possible minimum volume value of the resin** with respect to the **possible maximum volume of ITO**.

From 62.5 wt% of ITO, 9.06 volume of ITO is calculated (i.e. 62.5/6.9).

From 37.5 wt% of the resin, 26.8 volume of the resin is calculated (i.e. 37.5/1.4).

From these values, the resin amount of 37.5 wt% is calculated as 296 parts by volume with respect to 100 parts by volume of ITO (i.e. 26.8 x 100/9.06 = 296)

Thus, it is clear that Sumitomo Cement KK only teaches a much broader resin amount range than that of the present invention (0-296 parts by volume with respect to 100 parts by volume of conductive particles), and never discloses the presently claimed resin amount range of "*0.03-9.3 parts by volume*".

Thus, for these reasons above and in the Appeal Brief, Applicant submits that this rejection can no longer be sustained and should be withdrawn.

Conclusion

For at least the reasons set forth hereinabove, the rejection(s) of the claimed invention should not be sustained. Therefore, a reversal of the Final Rejection of November 28, 2005 is respectfully requested.

If any fee is required or any overpayment made, the Commissioner is hereby authorized to charge the fee or credit the overpayment to Deposit Account # 18-0013 under OKA-0019.

Dated: September 12, 2007

Respectfully submitted,

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Should additional fees be necessary in connection with the filing of this paper, or if a petition for extension of time is required for timely acceptance of same, the Commissioner is hereby authorized to charge Deposit Account No. 18-0013 for any such fees; and applicant(s) hereby petition for any needed extension of time.